CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 90-133

SITE CLEANUP REQUIREMENTS FOR:

UNOCAL COMPANY

ARCO CORPORATION

FOSTER CHEMICAL COMPANY

THE KOCH TRUST

For Properties at:
301 401, AND 411 HIGH STREET AND 3675 ALAMEDA AVENUE,
OAKLAND, ALAMEDA COUNTY

FINDINGS

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter called the Board) finds that:

1. SITE DESCRIPTION Unocal Company, Unocal Chemicals Division, Arco Corporation (Arco); Foster Chemical Company; and the Koch Trust hereinafter referred to as the Dischargers own, owned or operated businesses at High Street (the Site) in Oakland, Alameda County. The Site regulated by this Order is located adjacent to the Oakland Inner Harbor which is contiguous with the San Francisco Bay (See Site Map, Appendix B). Unocal owns and currently operates a bulk chemical distribution facility at 401 High Street. Arco owned property at 301, 401 and 411 High Street where they operated a bulk petroleum facility. Arco and Unocal held a joint interest in American Mineral Spirits Company, Western (AMSCO-W) which also operated a bulk chemical plant at the Site. Arco leased all of the 401 and a portion of the 411 property to AMSCO-W. AMSCO-W in-turn leased a portion of its property to Foster Chemical Company which operated a solvent storage and distribution facility.

   The property at 301 and 411 High Street is currently owned by the Koch Trust (Koch) and occupied by Big B Lumberteria, a retail lumber business. North of the High Street properties is a property owned by The Learner Company, located at 3675 Alameda Avenue. Since 1950, Learner has owned and operated a scrap metal operation at this

location. In recent years the Learner property has been vacant and awaiting redevelopment. A 1,000 gallon underground diesel tank was removed from the eastern part of the property in 1988. The Learner property currently has no known storage tanks.

The Unocal property has eight above-ground storage tanks and 46 below-ground storage tanks which hold a variety of petroleum-derived products. Product is off-loaded from truck trailers and rail cars on-site using flexible hoses and pumps.

During ownership and occupancy by ARCO's predecessor, Richfield, four large above-ground and eight underground tanks were located on the 411 High Street property. Prior to Richfields sale of the property to William Belfrey, the above-ground tanks were removed and the underground tanks were abandoned without proper closure (tanks have not been closed in accordance with Subchapter 16, Title 23, California Code of Regulations). Belfrey then immediately sold the 411 High Street property to the Koch Trust.

2. REGULATORY STATUS Unocal is a discharger because of their ownership and operation of the chemical handling and storage facility at 401 High Street and their former involvement with operations at the 411 High Street property where releases of pollutants have occurred. Unocal knew or should have known of the existence of the discharges and they had ability to prevent the discharges. Pollutants discharged have affected the groundwater beneath the property at the Site and toluene has migrated off the 401 High Street (Unocal) property onto the Learner property. On April 20, 1988, Unocal was issued NPDES permit No. 88-067 permitting the discharge of treated groundwater from the on-site shallow zone at 401 High Street into the Oakland Inner Harbor. In addition to 401, at one time Unocal, then Union Oil Company, through its subsidiary American Mineral Spirits Company, Western (AMSCO-W), leased portions of the 411 High Street property where releases of pollutants are believed to have occurred.

Arco is a Discharger because of its past ownership of, and involvement in, all the parcels on High Street which are the subject of this Order. Arco knew or should have known of the existence of the discharge(s) and had some measure of control over the property. Arco has also been named as a discharger in this Order because they operated and were a party to chemical handling operations at the Site. Specifically, Arco, as Richfield Oil Company, operated a bulk petroleum and chemical handling and storage facility at 301 and 411 High Street. Arco owned the 411 property during

Foster Chemical's tenancy of that property and there is evidence that during that time, chemical pollutants were discharged to the soil and groundwater and that those chemicals eventually migrated onto the Learner Property.

Arco has also been named because they were half-owners of AMSCO-W which operated a bulk chemical plant at 401 High Street. AMSCO-W leased a portion of the 411 property from Arco; thus Arco may have had some operational responsibilities at the Site. Releases of pollutants are believed to have occurred at this location on the 411 property.

Provisions of this Order (Section C. 3.) are applied to both Unocal and Arco in cases where both companies were involved in ownership or operations of the northern portion of the 411 High Street property.

Foster Chemical Company is a discharger because of their occupancy at the 411 high Street parcel where they operated a chemical storage and handling facility where discharges are believed to have occurred.

Koch Investments Company is a discharger with secondary liability because, as the current owner, they are ultimately liable for existing pollution on, and emanating from, the 301 and 411 High Street property. There is currently no evidence that Koch itself discharged pollutants at their property. Koch would be required to meet the Specifications, Prohibitions and Provisions of this Order should Arco fail to act in accord with this Order. In addition sections of this Order may be modified and reissued if Koch fails to grant reasonable site access for investigation and remediation of pollution at the Site.

Mr. Frank Peckett has not been named as a discharger in this Order. If subsequent investigations disclose that the discharge of waste was caused or permitted by Mr. Peckett, then the Board will consider amending this Order to include him as a discharger.

The Learner Company has not been named as a Discharger at this time because, given currently available sampling data, groundwater pollution on their property does not appear to have originated there, but instead has migrated on-site from the 401 and 411 properties. It is recognized that timely compliance with some provisions of this Order depend on reasonable site access being granted to the Learner property. If subsequent investigations disclose that the discharge of waste did originate on the Learner property, or if Learner fails to grant reasonable site access for soil and groundwater investigation and remediation, then the

Board will consider amending this Order to include Learner as a discharger.

3. SITE HISTORY The Koch Trust has owned property at 301 High Street and 411 High Street since 1975. The Koch property (as managed by the Koch Investments Company) is currently occupied by Big B Lumberteria which is leasing the property and operating a retail lumber business.

ARCO: Arco's predecessor Richfield Oil Company owned the 301, 401 and 411 properties from 1946 through 1975. From 1946 through 1967 Richfield operated a bulk petroleum distribution facility on the 411 property. In addition, Richfield was a 50% owner in American Mineral Spirits Company-Western (AMSCO-W) from 1954 through 1969. AMSCO-W leased the 401 property from Richfield where it operated a bulk chemical facility. In 1969 Richfield sold their 50% interest in AMSCO-W to Unocal. From 1946 through 1975, Richfield also occupied the 301 property although there exact usage of the parcel is not known at this time. In 1975 Arco sold both the 301 and 411 parcels to Mr. William Balfrey who immediately sold them to the Koch Trust.

UNOCAL: In 1965 Union Oil Company bought Pure Oil Company which held 50% interest in AMSCO-W; thus Union became a 50% partner with Richfield of AMSCO-W. Two years later, in 1967 AMSCO-W negotiated 68 foot wide strip of land along the northern end of the 411 property; thus AMSCO-W became lease holder of all of the 401 and a portion of the 411 property. In 1969 Union bought Richfield's share of AMSCO-W and became sole owner.

AMSCO-W: American Mineral Spirits Company, Western (AMSCO-W) was a corporation formed when AMSCO, a nation-wide chemical distributor, and Richfield formed a joint venture. AMSCO-Western was lease holder at the Site from 1955 until 1975. In 1961 AMSCO, parent corporation of AMSCO-W, was bought by Pure Oil Company which was subsequently purchased by Union Oil in 1965; thus Union was a half-owner with Richfield. In 1969 Union bought Richfield's half of the AMSCO-W stock and became sole owner and shortly thereafter AMSCO changed its name to the Union Chemicals Division of Unocal. In addition to leasing the 401 property from Richfield, from 1967 until 1975 AMSCO-W leased the northern portion of the 411 property from Richfield and in-turn subleased it to Earl Foster and Frank Peckett, dba Foster Chemical. In 1975 the leases for 401 and the 411 terminated and control of the property, including the buildings constructed for Foster Chemical at 411 High Street reverted to Arco.

Foster Chemical Company: Foster Chemical Company is a

discharger because it subleased the northern portion of the 411 property from AMSCO-W where discharges of pollutants to soil and groundwater are believed to have occurred. From 1967 through 1975 AMSCO-W leased the northern portion of the property from Richfield who was the owner of the property. AMSCO-W in-turn subleased that part of the 411 property First to Earl Foster and then, in 1972, to Frank Peckett, dba Foster Chemical Company.

Mr. Frank Peckett: Mr. Peckett was owner of Foster Chemical Company. In 1972 he assumed the lease that Foster held with AMSCO-W for a portion of the 411 property where discharges of pollutants to soil and groundwater are believed to have occurred.

Documented Releases:
A major spill was reported at this Site in June of 1983 when 23,300 gallons of toluene was spilled during rail car off-loading at the Unocal tank farm. Unocal estimated that there were between 3,600 and 4,000 gallons of toluene in a undissolved fraction ("free") in the subsurface. Unocal installed four recovery wells on their own property and on the Learner property in an effort to recover free product only. To respond to the release, Unocal also constructed and continues to operate an interceptor trench in order to remove and treat groundwater in the "A Zone". Residual toluene currently remains in the soil and groundwater at this Site.

4. HYDROGEOLOGY Subsurface investigations have identified three water-bearing zones beneath the Site. The upper zone ("A Zone") consists of discontinuous sandy deposits, occurring from about 2 feet to 8 feet below the ground surface (bgs). These deposits are underlain by 4 to 8 feet of clayey silts and silty clays. The "A Zone" contains water seasonally (vadose) some of which maybe isolated from lower units by clayey soils (perched) and is presumed to flow generally to the west into the Oakland Inner Harbor.

The deep zone ("B Zone") consists of sandy deposits from approximately 10 feet to 15 feet bgs over silty clay and clayey silt deposits from 15 to 25 feet bgs. On the Learner property the "B Zone" appears to be continuous but "tapers out" toward at the north end of the property. Groundwater flow in the "B Zone" is largely in a westerly direction toward the Oakland Inner Harbor, based upon water level measurements from on-site monitoring wells. Based upon a 1989 tidal study, the "B Zone" is presumed to be in hydraulic communication with the Oakland Inner Harbor.

The lower zone ("C Zone") consists of patches of fine and course sands and small gravels and is found at a depth of 40

to 52 feet. "C Zone" data was collected from only three wells (W-7, W-23, W-24). No additional borings or wells have yet been made to these depths. The depth to groundwater in two of the wells was approximately 40 feet below the ground surface. The "C Zone" is above the Merritt Sand formation, which is a good quality regional aquifer that breaches land surface on Alameda Island (across the Oakland Inner Harbor). Based on regional drainage patterns the direction of groundwater flow in the "C Zone" is presumed to be westerly extending under the Inner Harbor Channel toward Alameda Island.

5. ADJACENT SITES The Unocal (401 High Street), former Arco (Koch) (411 and 301 High Street) and Learner properties (3675 Alameda Avenue) comprise the Site. The Site is located in Alameda County and is bordered by a retail tire company to the north, Alameda Avenue to the northeast, warehouse properties to the east, High Street to the south and the Oakland Estuary to the west (See location map, Appendix B). No subsurface investigations have been conducted at adjacent sites.

6. SUBSURFACE INVESTIGATIONS

UNOCAL:
A March 1983 report, entitled "Subsurface Site Investigations", submitted by Unocal to the Board, showed soil and groundwater on the Unocal property to contain various solvent chemicals and petroleum constituents. Since 1983, Unocal has conducted extensive soil and ground investigations both on- and off-site to characterize the scope of the toluene spill. Surface investigations were conducted on the Unocal property beginning in 1983, and included the following activities: installation of 12 groundwater monitoring wells, drilling of three soil borings, subsurface sampling and analyses, and aquifer testing. In September of 1989 Unocal installed three additional wells on their property and took samples from four existing wells. Dissolved VOCs have been detected in groundwater monitoring wells on-site since 1983.

Volatile organic compounds have been found in groundwater. Compounds detected in groundwater include tetrachloroethylene (PCE), trichloroethylene (TCE), 1,1,1-trichloroethane (1,1,1,-TCA), 1,1,-dichloroethane (1,1-DCA), trichloroethane (1,1,2-TCA), 1,2,-dichloroethane (1,2,-DCA), trans-1,2-dichloroethylene (1,2-DCE), 1,1-dichloroethylene (1,1-DCE), dichloromethane (methylene chloride), chloromethane, Freon 113, vinyl chloride , benzene, ethylbenzene, acetone, toluene, methylethylketone (MEK) and isoproponal. Semi-volatile compounds detected in groundwater include fluoranthene, isophorone, naphthalene,

phenanthrene, pyrene, phenol and pentachlorophenol.

Toluene found in soil and groundwater on-site is believed to be largely derived from the 1983 toluene spill. The sources of additional chemicals will be determined during site closure activities.

ARCO (KOCH):
Arco has not conducted any soil or groundwater investigations on the property it owned at 301, 401 and 411 High Street. In 1983, Unocal installed a pair of monitoring wells along the southeastern portion of the Koch property where Arco had operated their facility (W-13, W-13A). Sampling of these wells showed the presence of organic chemicals. In 1988, Unocal installed three temporary monitoring wells, submitted four soil samples, and conducted subsurface sampling and analyses. Again the results of sampling these wells indicate that there are chemicals present in the soil and groundwater on the 411 property.

Compounds detected in groundwater include PCA 1,1,1,-TCA, 1,1-DCA, 1,1,2-TCA, 1,2,-DCA, DCE, chloromethane, vinyl chloride methylene chloride, benzene, ethylbenzene, acetone, toluene, MEK.

LEARNER:
In 1983 Unocal conducted an investigation of chemicals on its own property and the adjacent Learner property which included the following activities: installation of ten temporary groundwater monitoring/extraction wells and the drilling of nine soil borings in an effort towards recovery of free toluene in the soil on the Learner property.

In 1988 and 1989, Unocal installed nine temporary monitoring wells, 75 soil borings and 16 monitoring wells, conducted subsurface sampling and analyses, aquifer testing, a soil gas survey, and soil gas venting (Vapor Extraction System) performance testing. The results of these investigations indicate that there are chemicals present in the soil and groundwater on the Learner property.

Compounds detected in groundwater include PCE, TCE, 1,1,1-TCA, 1,1-DCA, 1,1,2-TCA, 1,2-DCA, DCE, chloromethane, vinyl chloride methylene chloride, benzene, ethylbenzene, acetone, toluene, and MEK. The toluene present on the Learner property is derived from the 1983 toluene spill and other up-gradient sources. The chlorinated chemical compounds appear to be primarily derived from the Arco property at 411 High Street.

7. GROUNDWATER PLUMES

The groundwater containing toluene beneath the Unocal site has migrated off-site onto the Learner property. Groundwater containing chlorinated VOCs detected on the Learner property is believed to be the result of migration from the 411 High Street property. The exact source(s) of the chlorinated compounds found on the Unocal property has not yet been determined.

The Board encourages the Dischargers and Responsible Parties to cooperate in joint investigations and the remedial measures for the entire plume area.

8. INTERIM REMEDIAL ACTIONS Interim remedial actions have been taken by Unocal including construction and operation of an interceptor trench which runs along the western shoreline of the Unocal property. The trench is designed to remove groundwater from the "A Zone". Groundwater is treated using activated carbon and discharged to the Oakland Inner Harbor under NPDES Permit No.0029297. Additional remedial actions are needed to address "B Zone" and "C Zone" pollution. A report entitled Groundwater Investigations and Remedial Investigations submitted to the Board by Unocal in October of 1989 proposed, in concept, a vapor extraction system to be installed on the southern portion of the Learner property. This system would be designed to primarily remediate toluene in shallow soils. Additionally, Unocal has discussed installation of four to six groundwater extraction wells along the shoreline of the Site. Unocal has reported that two versions of a groundwater extraction system are currently under design.

9. SCOPE OF THIS ORDER This Order contains tasks for completion of groundwater characterization at the Site; implementation and evaluation of interim remedial actions for on-site and off-site soil and groundwater pollution, and evaluation and implementation of final cleanup actions. These tasks are necessary to alleviate the threat to surface and groundwater posed by the migration of chemicals and to provide a substantive technical basis for designing and evaluating the effectiveness of final cleanup alternatives.

10. The Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) on December 17, 1986. The Basin Plan contains water quality objectives and beneficial uses for the central San Francisco Bay and contiguous surface and groundwaters.

11. The "A" B" and "C" Zones currently have no existing use. The potential beneficial uses of the "B" Zone, and possibly the "C" Zone groundwater underlying and adjacent to the facility include:

a. Industrial process water supply
b. Industrial service water supply
c. Municipal and Domestic water supply
d. Agricultural water supply

12. The existing and potential beneficial uses of the Central Bay and Oakland Estuary include:

a. Contact and non-contact water recreation
b. Wildlife habitat
c. Preservation of rare and endangered species
d. Estuarine habitat
e. Fish spawning and migration
f. Industrial process and service supply
g. Shell fishing
h. Navigation
i. Ocean commercial and sport fishing

13. The Dischargers have caused or permitted, and threaten to cause or permit waste to be discharged or deposited where it is or probably will be discharged to waters of the State and create or threaten to create a condition of pollution or nuisance.

14. This action is an Order to enforce the laws and regulations administered by the Board. This action is categorically exempt from the provisions of the CEQA pursuant to Section 15321 of the Resources Agency Guidelines.

15. The Board has notified the Dischargers, responsible parties and interested agencies and persons of its intent under California Water Code Section 13304 to prescribe Site Cleanup Requirements for the discharge and has provided them with the opportunity for a public hearing and an opportunity to submit their written views and recommendations.

16. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, pursuant to Section 13304 of the California Water Code, that the Dischargers shall cleanup and abate the effects described in the above findings as follows:

A. SPECIFICATIONS

1. Remediation Activities: The Dischargers shall conduct site investigation, monitoring and remediation activities as needed to define the current local hydrogeologic conditions, to define the lateral and vertical extent of soil and groundwater pollution, and to remediate soil and groundwater pollution. Should

monitoring results show evidence of pollutant migration, additional characterization and remediation may be required. Within 60 days of the Executive Officer's determination and actual notice to Koch Investments Company that Unocal and/or Arco has failed to comply with this paragraph, Koch Trust, as landowners, shall comply with this specification, and Sections C. 2. and 3., below. In addition Koch Investments shall grant reasonable site access to subject parties for the purposes of site investigation and remediation at 301 and 411 High Street.

2. Nuisance Clause: The storage, handling, treatment or disposal of soil or groundwater containing pollutants shall not create a nuisance as defined in Section 13050(m) of the California Water Code.

3. Clean-up Goals - Soils: The cleanup goal for source-area soils are as follows. For volatile organic compounds the cleanup level shall be no greater than 1 ppm. All samples shall be analyzed using applicable EPA analytical methods or methods shown through State or peer review approval to be equivalent to EPA methods.

   Alternate soil cleanup goals may be proposed based on site specific data. If higher levels of pollutants to be left in soils are proposed, the Dischargers must demonstrate that cleanup to the aforementioned levels is infeasible, that the alternate levels will not threaten the quality of waters of the State, and that human health and the environment are protected. Final cleanup goals for source-area soils must be acceptable to the Executive Officer. If any chemicals are left in the soil, follow up groundwater monitoring will be required.

4. Clean-up Goals - Groundwater: Final cleanup levels and goals for polluted groundwater, including sources of drinking water, on-site and off-site, shall be background water quality if feasible, in accordance with the State Water Resources Control Board's Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California", and other applicable standards and shall be based on an evaluation of the cost, effectiveness and a risk assessment to determine affect on human health and the environment, and shall be approved by the Board. These levels shall have a goal of reducing the mobility, toxicity, and volume of pollutants.

5. Reclamation: If groundwater extraction and treatment

is considered as an alternative, the feasibility of water reuse, re-injection, and disposal to the sanitary sewer must be evaluated. Based on the Regional Board Resolution 88-160, the Dischargers shall optimize, with a goal of 100%, the reclamation or reuse of groundwater extracted as a result of cleanup activities. The Dischargers shall not be found in violation of this Order if documented factors beyond the Dischargers' control prevent the Dischargers from attaining this goal, provided the Dischargers have made a good faith effort to attain this goal. If reuse or re-injection is part of a proposed alternative, an application for Waste Discharge Requirements may be required. If discharge to waters of the State is part of a proposed alternative, an application for an NPDES permit must be completed and submitted, and must include the evaluation of the feasibility of water reuse, re-injection, and disposal to the sanitary sewer.

B. PROHIBITIONS

1. The discharge of wastes or hazardous materials in a manner which will degrade water quality or adversely affect the beneficial uses of the waters of the State is prohibited.

2. Further significant migration of pollutants through subsurface transport to waters of the State is prohibited.

3. Activities associated with the subsurface investigation and cleanup which will cause significant adverse migration of pollutants are prohibited.

C. PROVISIONS The Dischargers shall comply with the Prohibitions and Specifications above, in accordance with the following time schedule and tasks:

1. UNOCAL, TASKS AND COMPLETION DATES.

a. TASK: SUBMIT SAMPLING AND ANALYSIS, AND QUALITY ASSURANCE PROJECT PLANS.

Submit Sampling and Analysis, and Quality Assurance Project Plans for projected on and off-site sampling, acceptable to the Executive Officer.

COMPLETION DATE: September 20, 1990

b. TASK: SUBMIT A GROUNDWATER MONITORING PLAN.

Submit a groundwater monitoring plan, acceptable to the Executive Officer, that addresses monitoring of groundwater from wells representative of conditions found in the Zones A and B at the site. The plan shall include monitoring of groundwater in areas where toluene and other chemicals that originated from the Unocal facility have thus far been detected. This monitoring plan may be modified based upon results of additional pollution investigations.

COMPLETION DATE: September 20, 1990

c. ON-PROPERTY (401 High Street) TASKS:

(i) SUBMIT A SITE REMEDIATION PLAN ADDRESSING REMEDIATION OF GROUNDWATER POLLUTION FOUND ON UNOCAL PROPERTY.

Submit a Site Remediation Plan acceptable to the Executive Officer that fully describes remedial actions to be taken to control, abate and/or remove pollution found in groundwater in Zones A and B on the Unocal property. The plan shall include a discussion of all existing data, a review of the effectiveness of existing interim remedial measures and preliminary plans of proposed extraction and treatment systems and a comprehensive schedule for implementation of remedial action(s).

COMPLETION DATE: October 1, 1990

(ii) IMPLEMENTATION OF REMEDIAL ACTIONS: ZONE B GROUNDWATER.

Submit a technical report acceptable to the Executive Officer documenting that remedial actions for the "B Zone" have been implemented.

COMPLETION DATE: Seven months after the Executive Officer's written approval of the site remediation plan pursuant to Section C. 1. c. (i), above.

(iii) SUBMIT A WORK PLAN FOR SOILS INVESTIGATION.

Submit a report acceptable to the Executive Officer that describes how Unocal plans to sample soils at the Unocal property as part of Unocal's proposed site closure. The plan shall include a

discussion of sampling methods, number and location of soil samples, techniques and analytical methods for soils under and surrounding all tanks.
COMPLETION DATE: December 1, 1990.

(iv) SUBMIT A REPORT OF SOILS INVESTIGATION.

Submit a report acceptable to the Executive Officer describing chemicals present in soil on the Unocal property. This report shall include all analytical data, chain of custody and documentation of testing using applicable EPA methods or equivalent methods.

COMPLETION DATE: Four months after the Executive Officer's written approval of a work plan submitted pursuant to C.1.c.(iii).

(v) SUBMIT A REPORT ON THE EFFECTIVENESS OF FINAL REMEDIAL ACTION: GROUNDWATER AND SOILS.

Submit a technical report acceptable to the Executive Officer which evaluates the effectiveness of the interim remedial actions for the soil and groundwater emanating from the Unocal property. This report should document implementation of any additional measures necessary to fully contain the groundwater.

COMPLETION DATE: Febuary 1, 1992.

(vi) SUBMIT AN INVESTIGATION ADDRESSING THE LATERAL AND VERTICAL EXTENT OF POLLUTION IN "C ZONE" GROUNDWATER AND LOWER DEPTHS IF NECESSARY.

Submit a technical report acceptable to the Executive Officer which describes an investigation of pollutants which exist in the "C Zone" and below the "C Zone". This investigation shall include, but need not be limited to, sampling of existing "C Zone" wells (W7, W23, and W24) for volatile organic compounds, total dissolved solids (TDS) and determination of water level elevations on a quarterly basis as well as completion of additional soil borings as necessary to properly define "C Zone" hydrogeology.

COMPLETION DATE: August 1, 1991

2. ARCO, TASKS AND COMPLETION DATES.

a. TASK: SUBMIT A REPORT LAND USE HISTORY FOR THE 301, 401 AND 411 HIGH STREET PROPERTIES.

Submit a detailed report of land use history which, at a minimum, include the following: (i) exact dates of ownership; (ii) detailed scale maps of subject properties showing property boundaries and all above and below-ground structures; (iii) Complete list of lessees and (iv) the nature and extent of land use for each occupant.

COMPLETION DATE: October 19, 1990.

b. COMPLETE SOIL AND GROUNDWATER POLLUTION INVESTIGATION FOR 301 HIGH STREET.

Submit a technical report acceptable to the Executive Officer containing the results of a hydrogeologic investigation to determine the existence of soil and groundwater pollution in the "A Zones" and "B Zones" on the 301 High Street property. This report shall at a minimum include soil and groundwater sampling and analysis and an evaluation of on-property contamination. The report shall fully describe the location of pollutants, pollutant source areas and the hydraulic properties of affected water-bearing zones. The report shall also contain a groundwater monitoring program, including sampling and analysis and quality assurance plans.

COMPLETION DATE: December 21 , 1990.

3. ARCO, UNOCAL, AND FOSTER, TASKS AND COMPLETION DATES.

a. TASK: WORK PLAN FOR SOIL AND GROUNDWATER POLLUTION CHARACTERIZATION AT 411 HIGH STREET.

Submit a work plan acceptable to the Executive Officer which describes proposed hydrogeologic investigation necessary to determine the lateral and vertical extent of soil and groundwater pollution in the "A Zone" and the "B Zone" for the 411 High Street property. This plan shall include investigation of the entire 411 property north to the Learner property and west to Unocal. This

plan shall include a complete schedule for implementation and remediation. Unocal's responsibility under this Task pertains to pollutants at or emanating from the northern portion of the 411 High Street property where Foster Chemical Company was located.

COMPLETION DATE: November 15, 1990

b. TASK: COMPLETE SOIL AND GROUNDWATER POLLUTION CHARACTERIZATION.

Submit a technical report acceptable to the Executive Officer containing the results of a hydrogeologic investigation to determine the lateral and vertical extent of soil and groundwater pollution in the "A Zones" and "B Zones" on the entire 411 High Street property and areas affected by releases from this property. This report shall at a minimum include soil and groundwater sampling and analysis and an evaluation of contamination found both on and off the 411 High Street property. The report shall fully describe the location of pollutants, pollutant source areas, including underground tanks, and the hydraulic properties of affected water-bearing zones. The report shall also contain a groundwater monitoring program, including sampling and analysis and quality assurance plans. Unocal's responsibility under this Task pertains to pollutants at or emanating from the northern portion of the 411 High Street property where Foster Chemical Company was located.

COMPLETION DATE: Four months after written approval by the Executive Officer of the work plan submitted for Section C.3.a., 1990.

c. TASK: SUBMIT A REMEDIAL ACTION FEASIBILITY STUDY.

Submit a technical report acceptable to the Executive Officer which contains a detailed evaluation of all remedial alternatives in order to select interim remedial actions for soil and groundwater pollution existing on the 411 property or off-property as a result of migration from the 411 property. The report will include a detailed screening of technical alternatives for soil and groundwater pollution remediation. The study shall include an assessment of 1) potential effectiveness, 2) technical and administrative

feasibility, and 3) projected costs of remedial action. The study shall include a rationales for both the alternatives selected for screening and a detailed explanation of the alternatives selected. Innovative and emerging technologies shall be included in the technology screening but may be addressed separately from other technologies. The study shall contain recommendations for implementation, and a plan and schedule for implementation of the proposed interim remedial actions. Unocal's responsibility under this Task pertains to pollutants at or emanating from the northern portion of the 411 High Street property where Foster Chemical Company was located.

COMPLETION DATE: Two months after written approval by the Executive Officer of the report submitted in Section C.3.b.

d. TASK: IMPLEMENTATION OF INTERIM REMEDIAL ACTION IN AFFECTED GROUNDWATER ZONES.

Submit a technical report acceptable to the Executive Officer documenting implementation of interim remedial actions for the water-bearing zones at the Site that have been affected by pollutants that have emanated from points on the 411 property. Unocal's responsibility under this Task pertains to pollutants at or emanating from the northern portion of the 411 High Street property where Foster Chemical Company was located.

COMPLETION DATE: Six months after written approval by the Executive Officer of the report submitted in Section C.3.c.

e. TASK: SUBMIT A WORK PLAN TO ADDRESS COMMINGLED GROUNDWATER PLUME(S).

Submit a technical report acceptable to the Executive Officer which contains a work plan for investigations and remedial actions for the pollutant plume(s) resulting from discharge by Arco or its tenants and present on Arco, Learner or Unocal properties. This report shall also inform the Executive Officer of the status of coordination in these investigations and remedial actions.

COMPLETION DATE: April 1, 1991

f. TASK: COMPLETE FULL PLUME CHARACTERIZATION.

Submit a report which details the lateral and vertical extent of soil and groundwater pollution for pollutants that have emanated from the former Arco property at 411 High Street.

COMPLETION DATE: May 1, 1991.

4. If the dischargers are delayed, interrupted or prevented from meeting any of the completion dates specified in this Order, the dischargers shall promptly notify the Executive Officer prior to the due date.

5. The Dischargers shall submit to the Regional Board acceptable reports on compliance with the requirements of this Order, and acceptable activity monitoring reports that contain descriptions and results of work performed. These reports are to be submitted according to a program prescribed by the Regional Board and outlined below.

a. **ON A QUARTERLY BASIS**, technical reports on status of compliance with this Order shall be submitted by each Discharger to the Board, commencing on January 15, 1991. Each **quarterly status** report shall cover the previous calendar quarter and shall include, but are not limited to, the following:

i. Summary of work completed since submittal of the previous report, and work projected to be completed by the time of the next report.

ii. Identification of any obstacles which may threaten compliance with the schedule of this Order and what actions are being taken to overcome these obstacles.

b. **ALSO, ON A QUARTERLY BASIS**, technical reports on soil and groundwater monitoring shall be submitted by each Discharger to the Board, commencing on January 15, 1991, and covering the previous calendar quarter. Each **quarterly monitoring** report shall include, but need not be limited to, the following information:

i. Results of quarterly free product measurements and water quality sampling analyses for all on-site wells.

ii. Quarterly updated water table and piezometric surface maps, based on the most recent water level measurements for all affected water bearing zones for all on-site and off-site wells.

iii. A cumulative tabulation of volume of extracted groundwater, quarterly chemical analysis results for all groundwater extraction wells, and pounds of pollutants removed.

iv. A cumulative tabulation of all well construction details, and quarterly water level measurements.

v. Results of soil vapor sampling analyses, soil pollution plume maps based on these results, a cumulative tabulation of chemical analysis results for all soil vapor extraction wells, and a cumulative tabulation of pounds of chemicals removed.

c. **ON AN ANNUAL BASIS,** technical reports on the progress of compliance with all requirements of this Order shall be submitted to the Board by each Discharger, due on February 15, of each year beginning in 1991, and covering the previous year. Annual reports may include quarterly reports due concurrently. The progress reports shall include, but need not be limited to, progress on the site investigation and remedial actions, and operation of interim and final remedial actions and /or systems.

4. All hydrogeological plans, specifications, reports, and documents shall be signed by or stamped with the seal of a registered geologist or professional engineer, or a certified engineering geologist.

5. All samples shall be analyzed by State certified laboratories or laboratories accepted by the Board using approved EPA methods for the type of analysis to be performed. All laboratories shall maintain Quality Assurance/Quality Control records for Board review.

6. The Dischargers shall maintain in good working order, and operate, as efficiently as possible, any facility or control system installed to achieve compliance with the requirements of this Order.

7. Copies of all correspondence, reports, and documents

pertaining to compliance with this Order, shall be provided to the following agencies:

a. Alameda County Flood and Conservation District-Zone 7.
b. Alameda County Environmental Health Department, Hazardous Materials Section.
c. State Department of Health Services/Toxic Substances Control Division-Region 2, Site Mitigation Section.

8. The Dischargers shall permit the Board or its authorized representative, in accordance with Section 13267(c) of the California Water Code:

a. Entry upon premises in which any pollution sources exist, or may potentially exist, or in which any required records are kept, which are relevant to this Order.

b. Access to copy any records required to be kept under the terms and conditions of this Order.

c. Inspection of any monitoring equipment or methodology implemented in response to this Order.

d. Sampling of any groundwater or soil which is accessible, or may become accessible, as part of any investigation or remedial action program undertaken by the dischargers.

9. The Dischargers shall file a report on any changes in Site occupancy and ownership associated with the facility described in this Order.

10. If any hazardous substance is discharged in or on any waters of the state, or discharged and deposited where it is, or probably will be discharged in or on any waters of the state in quantities required to be reported pursuant to Water Code Sections 13271 and 13272, each Discharger shall report such discharge to this Regional Board, at (415) 464-1255 on weekdays during office hours from 8 a.m. to 5 p.m., and to the Office of Emergency Services at (800) 852-7550 during non-business hours. A written report shall be filed with the Regional Board within five (5) working days and shall contain information relative to: the nature of waste or pollutant, quantity involved, duration of incident, cause of spill, Spill Prevention, Control, and Countermeasure Plan (SPCC) in effect, if any, estimated size of affected area, nature of effect, corrective measures that have been taken or planned,

and a schedule of these activities, and persons/-agencies notified.

11. The Board will review this Order periodically and may revise the requirements when necessary.

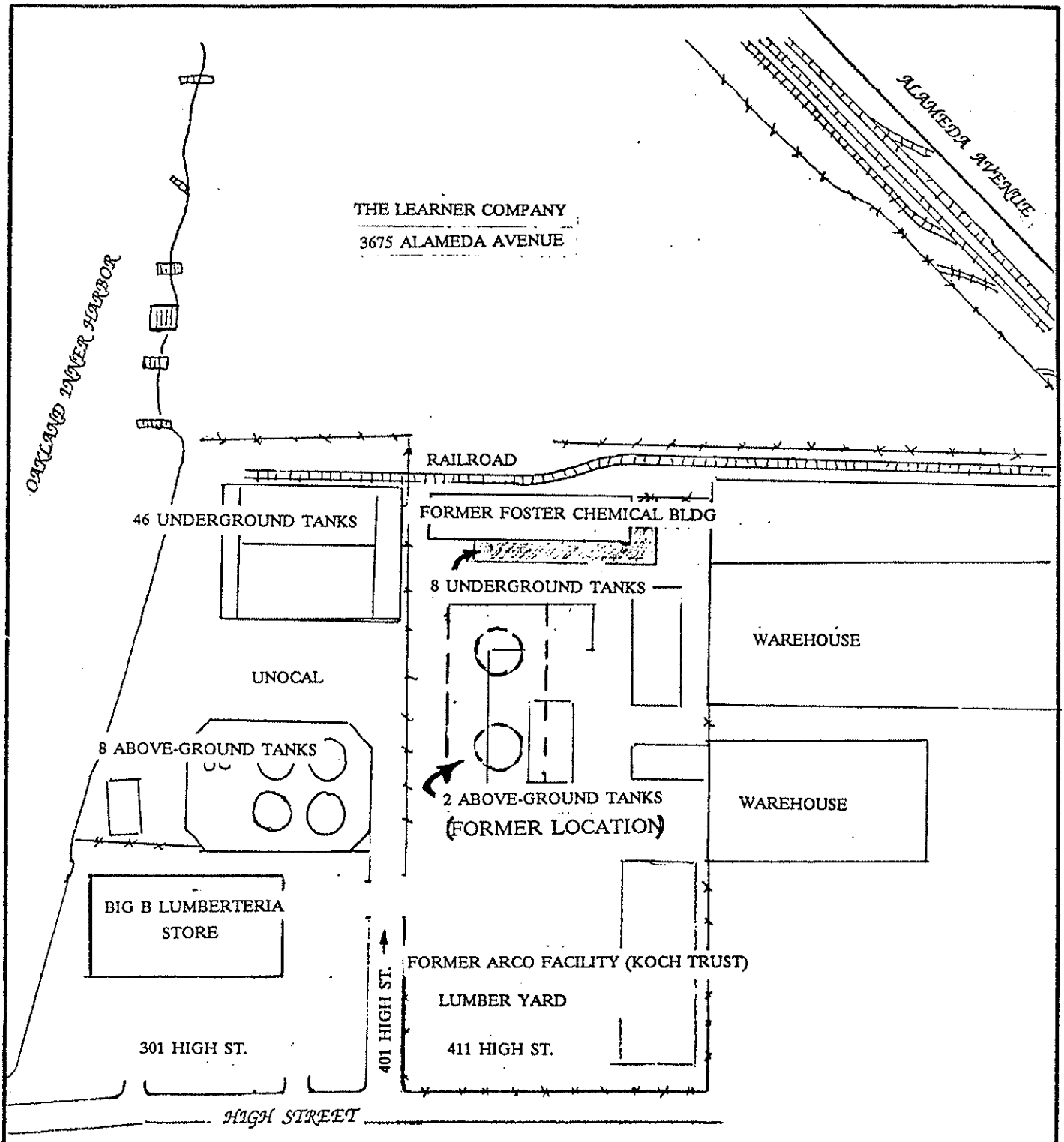
I, Steven R. Ritchie, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on September 19, 1990.

Steven R. Ritchie
Executive Officer

D. APPENDICES

A. Location Map & Site Map.

12ordrd7



STATE OF CALIFORNIA
REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

UNOCAL ARCO LEARNER

KOCH TRUST

Not To Scale

DRAWN BY: TRG	DATE: 5/10/90	DRWG. NO.